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# **NECESSITY OR OPPORTUNITY? THE EFFECTS OF STATE FRAGILITY AND ECONOMIC DEVELOPMENT ON ENTREPRENEURIAL EFFORTS**

**José Ernesto Amorós\***

EGADE Business School, Tecnológico de Monterrey  
Av. Carlos Lazo 100, Santa Fe.  
01389, Mexico City.  
+ 52 5 9177 8000  
[amoros@itesm.mx](mailto:amoros@itesm.mx)

&

Universidad del Desarrollo, Chile.

**Luciano Ciravegna**

King's College, University of London  
King's International Development Institute  
Room 1.08, Chesham Building  
Strand, London, WC2R 2LS  
[luciano.ciravegna@kcl.ac.uk](mailto:luciano.ciravegna@kcl.ac.uk)

&

INCAE, Costa Rica

**Vesna Mandakovic**

Universidad del Desarrollo  
School of Business and Economics  
Av. Plaza 700, Las Condes. Santiago, Chile.  
[vmandakovic@udd.cl](mailto:vmandakovic@udd.cl)

**Pekka Stenholm**

University of Turku  
Entrepreneurship Unit, Turku School of Economics  
Rehtorinpellonkatu 3, FI-20500  
[pekka.stenholm@utu.fi](mailto:pekka.stenholm@utu.fi)

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**\*Correspondent Author**

# **NECESSITY OR OPPORTUNITY? THE EFFECTS OF STATE FRAGILITY AND ECONOMIC DEVELOPMENT ON ENTREPRENEURIAL EFFORTS**

## **ABSTRACT**

This paper studies the effects of state fragility and economic development on necessity and opportunity-based individual entrepreneurial efforts. We contribute to the literature on the contextual determinants of entrepreneurship by examining multilevel data on 956,925 individuals from 51 countries for the period of 2005–2013. We show that state fragility has a positive effect on necessity-based entrepreneurial efforts while hindering opportunity-based efforts. Our findings illustrate that the level of economic development moderates the relationship between state fragility and necessity-driven entrepreneurial efforts reducing the likelihood of the latter. We discuss the implications for theory and for pro-entrepreneurship policy.

## **INTRODUCTION**

The different motivations for entrepreneurial decisions influence the impact that a new venture may have on society and the economy (Baumol, 1990; Estrin, Mickiewicz, & Stephan, 2013a; Williams, 2009). Opportunity-based entrepreneurs start a business in the pursuit of growth, profit, innovation, and personal aspirations (Cullen, Johnson, & Parboteeah, 2014; McMullen, Bagby, & Palich, 2008; Reynolds, Bosma, Autio, Hunt, De Bono, Servais, Lopez-Garcia, & Chin, 2005). Opportunity-based entrepreneurship (OPP) is linked to innovative activities that have the potential to create jobs and increase productivity in an economy (Stenholm, Acs, & Wuebker, 2013).

Necessity-based entrepreneurs, on the other hand, start a business because of “push motives,” as a way to compensate for a lack of other sources of employment (Shane, 2009; Valdez & Richardson, 2013). Necessity-based entrepreneurship (NEC) is often linked to informal

activities, unemployment, economic recession, and poverty (Acs & Amorós, 2008; Banerjee & Duflo, 2007; Block & Sandner, 2009; Gries, & Naudé, 2011).

Drawing from Baumol (1990) and new institutional economics (North, 1990), we posit that the national context—in particular, the state’s capacity to provide the foundations for the functioning of markets, such as political stability, a clear regulatory framework, and accountable rule enforcement mechanisms—shapes incentives for both OPP and NEC entrepreneurial efforts, which, in turn, have implications for economic development (Acemoglu & Robinson, 2012). Building on previous research by Ault (2016) and Ault & Spicer (2014), we study the national context determinants of entrepreneurship using *state fragility*. A concept based on the quality of governance and formal institutions, state fragility is “*the degree to which the state is unable and/or unwilling to fulfil core government functions for the majority of its people, including the poor*” (Ault & Spicer, 2014).

The literature on the types of entrepreneurial effort remains rather divided, with scholars of entrepreneurship focusing more on the determinants of OPP efforts and such sub-categories as high-growth and strategic entrepreneurship (Levie & Autio, 2011). Scholars of economic development, however, tend to focus on the causes and effects of NEC efforts (Bruton et al., 2015). We address one of the empirical and methodological gaps in the literature on OPP and NEC efforts: most studies examine country-level rates of entrepreneurial efforts, failing to capture the interaction between country and individual drivers (Bruton, Ahlstrom, & Li, 2010; Hoskisson, Covin, Volberda, & Johnson, 2011). We extend the research of Bowen and De Clercq (2008), McMullen et al. (2008), Valdez and Richardson (2013), and Stenholm et al. (2013) by using a multilevel model to examine the effects of country context—in particular, state fragility and the level of economic development—on the probability that an individual will start

a business for either opportunity- or necessity-based reasons. As control variables, we include some demographic characteristics and entrepreneurial attitudes at the individual level, such as education, gender, age, social capital, self-efficacy and fear of failure; and some formal institutional variables related to entrepreneurship dynamics at the country level, such as labor freedom, trade freedom, and unemployment rates. We test our model on a unique sample of 956,925 individuals from 51 countries, combining primary data from the Global Entrepreneurship Monitor (GEM) for the period 2005–2013.

Our results confirm that low levels of state fragility provide a stable and well-defined institutional framework under which individuals will more likely reap the benefits of OPP entrepreneurial efforts over employment (Baumol, 1990; North, 1990). High state fragility provides society with less-clear rules and enforcement mechanisms, making it more difficult for individuals to plan the investments of their personal and financial resources. This seems to direct them towards NEC efforts (Baumol, 1990). The results also show that the effects of state fragility on individual NEC efforts are moderated by economic development. In less-developed economies, small changes in state fragility have strong effects on the probability that an individual will engage in NEC efforts, suggesting that NEC is a mechanism for escaping not only from poverty, but also from the failure of the state and its institutions to perform their designated functions—a finding consistent with Baumol (1990) and Naudé (2011). In richer economies, changes in state fragility have weaker effects on NEC. This novel finding suggests that the link between state fragility and NEC efforts is particularly important for poorer economies and becomes less important as an economy becomes wealthier. Our contribution to the stream of comparative entrepreneurship literature is threefold. First, building on the work of Ault and Spicer (Ault & Spicer, 2014; Ault, 2016) and development economists (Acemoglu & Robinson,

2012), we study the effects of state fragility on entrepreneurial behaviors. We contribute to the research on international comparative entrepreneurship (Bruton et al., 2010) by providing a fine-grained discussion about how state fragility and the level of economic development determine cross-country differences for *both* OPP and NEC efforts, linking previous work that focuses on *either* OPP or NEC with the literature on state fragility and economic development (Bowen & De Clercq, 2008; Estrin et al., 2013a; Stephan, Hart, & Drews, 2015a). Our results reveal that the effects of state fragility decrease in strength as an economy develops, suggesting that NEC efforts might be linked not only to poverty and unemployment, as previously argued, but also to the state's failure to perform its basic functions.

Second, our analysis of the individual probability of starting a new entrepreneurial venture for necessity- or opportunity-based reasons extends the research on different types of entrepreneurial effort, which, thus far, has focused primarily on the determinants of average *national* rates of NEC and OPP. Our findings illustrate the effect of the institutional context on different types of entrepreneurship using a multilevel design, which allows us to study both individual- and country-level factors.

Third, in testing our hypotheses, we employ nine years of international country-level panel data and include a larger set of countries, which extends the scope of our study beyond that of previous research with similar research designs (Autio, Pathak, & Wennberg, 2013; Cullen, Johnson, & Parboteeah, 2014; Estrin, Mickiewicz, & Stephan, 2013b; Stephan, Uhlander & Stride, 2015b). These three contributions partially address Bruton et al.'s (2010) call for a wider inquiry in international comparative studies: "*Without such multi-country samples and investigations, it is more difficult to be sure that the institutional impact is applicable to a wide*

*set of environments rather than just an idiosyncratic result of the sample of a given country”* (pp. 432–433).

Our paper proceeds as follows. In the next section, we introduce the concepts of NEC and OPP efforts. In the following section, we introduce the concept of state fragility. We then develop our hypotheses related to state fragility and economic development and their effects on entrepreneurial efforts. The next section describes our data and explains our methodology. We then present a brief discussion of our empirical results on the relationship between entrepreneurship and state fragility. The final two sections conclude the study and discuss the implications of our results.

## **OPPORTUNITY-BASED AND NECESSITY-BASED ENTREPRENEURSHIP**

Studies of comparative entrepreneurship tend to focus on national rates of entrepreneurship activity, often measured by the total early-stage entrepreneurial activity (TEA) rate of the Global Entrepreneurship Monitor (GEM) (De Clercq, Lim, & Oh, 2013; Levie & Autio, 2011).

However, a high rate of entrepreneurial activity does not necessarily lead to positive economic outcomes (Shane, 2009). As Baumol (1990) illustrates, entrepreneurial activities differ, and not all of them have positive effects on the economy. For example, high rates of self-employment may result from the low availability of jobs and not from entrepreneurship-supportive conditions (Reynolds et al., 2005; Shane, 2009). Anokhin and Wincent (2012: p. 43) argue: “*Where individuals plunge into entrepreneurship out of necessity, and not to pursue high quality opportunities, one may expect their impact to be underwhelming. Where they go after high potential opportunities, they are likely to bring about innovation and improve overall competitiveness.*” Anokhin and Wincent (2012) find that total rates of new venture creation are

negatively associated with innovation and that the association is mediated by the level of economic development.

To advance the empirical foundations of policies supporting entrepreneurship, it is important to go beyond aggregated rates of entrepreneurial efforts and to clarify the determinants of different types of entrepreneurial endeavors (Alvarez & Barney, 2014; Reynolds et al., 2005; Valdez & Richardson, 2013). Previous work on the determinants of entrepreneurial efforts focuses mainly on OPP because of its potential impact on economic development (Acs, 2006; Bowen & De Clercq, 2008; Cullen et al., 2014; Levie & Autio, 2011). However, NEC is also an important phenomenon, especially in poor economies, where it is a source of income for individuals excluded from the labor market because of their ethnicity, gender, class, age, or lack of skills (Amorós & Cristi, 2008; Naudé, 2011). Rates of NEC efforts vary greatly across countries with similar income levels, which suggests the need for further inquiry into the role of context for NEC (Bruton, Ahlstrom, & Obloj, 2008).

Examining average yearly rates of entrepreneurial venture creation in 40 countries between 2002 and 2004 from the GEM, Bowen and De Clercq (2008) find that financial capital, educational capital, and regulatory protection are associated with potential high-growth entrepreneurship, whereas corruption and regulatory complexity are negatively associated with it. Their findings support Baumol's argument (1990) that strong formal institutions, such as the quality of the regulatory framework and the enforcement of laws preventing corruption, are linked to the type of entrepreneurial activity that can aid economic development.

McMullen et al. (2008) find that entrepreneurial rates of both types are negatively correlated with available employment opportunities (which they proxy using gross domestic product, GDP)



and positively correlated with labor freedom in their sample of GEM data covering 37 countries for the year 2002. McMullen et al. (2008) also argue that institutions influence national rates of entrepreneurial activities but that the mechanisms underlying NEC and OPP might differ, thus calling for further analysis that includes more countries and individual-level effects. Examining different types of institutions, Stenholm et al. (2013) and Valdez and Richardson (2013) show cultural, cognitive, and normative institutions to be related to national rates of NEC and OPP in their studies covering the years 2007–2008 and 2005–2007, respectively. We extend this research stream by examining the effects of state fragility, a construct that captures the quality of formal institutions, on individual-level NEC and OPP efforts through a multilevel research design applied to a larger sample (more countries and more years), as a number of scholars have suggested (McMullen et al., 2008; Levie & Autio, 2011; Valdez & Richardson, 2013; DeClercq et al., 2013).

## **STATE FRAGILITY AND TYPES OF ENTREPRENEURIAL EFFORTS**

Following Ault and Spicer (2014: 1819), who draw from Engberg-Pedersen, Andersen, and Jung (2008), we use this definition of state fragility: “the degree to which state power is unable and/or unwilling to deliver core functions to the majority of its people: security, protection of property, basic public services, and essential infrastructure.” State fragility captures the extent to which the state is capable of exercising its governance role, establishing the “rules of the game” and enforcing them, and providing basic public goods such as security.

Where the state is *not* fragile, its institutions lay the basis for economic exchanges to occur and sanction behavior that may have negative effects on society, such as violence, theft, and unlawful

acquisition of others' property (Barro, 1991; Knack & Keefer, 1995; North, 1990)<sup>1</sup>. In more-fragile states, institutions often fail to sanction detrimental behavior because of corruption, lack of accountability, a malfunctioning legal system, and the state's overall failure to provide the public goods needed for society and the economy to work (Baliamoune-Lutz & McGillivray, 2008; Knack & Keefer, 1995; World Bank, 2010; UNDP, 2011<sup>2</sup>).

Although research on state fragility remains scant, there are several entrepreneurship studies focusing on different factors encompassed by the concept of state fragility: corruption, political violence, the quality of regulatory frameworks, the effectiveness of government, the rule of law, and voice and accountability (Ault & Spicer, 2014). Previous researchers found that national rates of opportunity-based entrepreneurial activity are influenced by property rights protection, which, in turn, is related to the rule of law, the absence of corruption, and the effectiveness of government (McMullen et al., 2008; Autio & Acs, 2010; Estrin, Mickiewicz, & Stephan, 2013b).

Having stable and suitable protection of private property rights is associated with higher rates of formal entrepreneurship (Dau & Cuervo-Cazurra, 2014; Thai & Turkina, 2014). The presence of corruption, on the other hand, is associated with lower average national rates of OPP efforts (Bowen & De Clercq, 2008; Valdez & Richardson, 2013). Badly designed regulation has also

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<sup>1</sup> There are different categories and conceptualizations of institutions based on sociology and economics (Bruton et al., 2010; North, 1990; Scott, 2005). For parsimony, in this research, we focus on *formal institutions* derived from new institutional economics (North, 1990). Formal institutions “refer to the objective constraints and incentives arising from government regulations of individual and organizations actions” (Stephan et al., 2015b; 310).

<sup>2</sup> State fragility is a concept highly relevant to practitioners and policy making, as underlined by the fact that it is used by multilateral organizations and governments. The World Bank (2010) points out that fragile states are “*countries facing particularly severe development challenges: weak institutional capacity, poor governance, and political instability.*”

been found to have negative effects on venture creation, especially on OPP efforts (Bowen & De Clercq, 2008) and entrepreneurial growth aspirations (Estrin et al., 2013a; Levie & Autio, 2011). The effect of the overall institutional and governance capacity of the state on different types of *individual* entrepreneurial efforts, which we capture using state fragility, remains to be clarified (Stephan et al., 2015a). Accordingly, being an entrepreneur—especially a successful one—in a fragile state can attract the attention of criminals and corrupt officials, threatening business sustainability and personal security (Collier, 2009; Kistruck, Webb, Sutter & Bailey, 2015). Based on the above, we assume that higher levels of state fragility hinder individuals' engagement in OPP efforts. Thus, we hypothesize the following:

**Hypothesis 1:** State fragility negatively influences the probability that individuals will engage in opportunity-based entrepreneurship.

Fragile states provide only a small share of their citizens with the skills needed to find employment (Collier, 2009). Several dimensions of state fragility, including corruption (Bowen and DeClercq, 2008), malfunctioning labor markets, cumbersome regulations, and a weak rule of law, are associated with high levels of self-employment and informality (Dau & Cuervo-Cazurra, 2014; De Soto, 2000; Williams et al., 2016). Fragile states also fail to provide social safety nets to protect those who lack formal employment or have lost it, and who must then resort to NEC efforts to meet their needs (Banerjee & Duflo, 2007). Thus, we hypothesize the following:

**Hypothesis 2:** State fragility positively influences the probability that individuals will engage in necessity-based entrepreneurship.

## **Economic Development and Different Types of Entrepreneurial Efforts**

Previous studies have attempted to find an association between the types of entrepreneurial efforts and economic development (Carree, van Stel, Thurik, & Wennekers, 2007; Sautet, 2013). A country's level of economic development can affect both the rates of entrepreneurial efforts and their type (Sternberg & Wennekers, 2005; van Stel et al., 2005). Empirical evidence shows that entrepreneurial venture creation rates are higher in poor countries and decline as economies become wealthier (Wennekers et al., 2010). As Shane points out, *"if you want to find countries where there are a lot of entrepreneurs, go to Africa or South America"* (Shane, 2009: 143). A large percentage of the numerous entrepreneurs in developing countries start ventures—often becoming self-employed—in the informal sector in order to meet their basic needs (Banerjee & Duflo, 2007).

Several mechanisms help to explain the relationship between economic development and entrepreneurship. Individuals resort to NEC not only to substitute for the absence of employment opportunities, but also to meet their basic needs if wage employment fails to provide a sufficient income to do so (Margolis, 2014). As economies develop, the number of people who might engage in NEC to meet their basic needs decreases because economic development is correlated with poverty reduction and an improved standard of living. As average wages increase and the opportunity cost of engaging in entrepreneurship becomes higher, the incentives for entrepreneurial efforts decrease, especially those aimed solely at gaining a basic source of income (Acs, 2006). Economic development also entails more diffused wealth in the form of savings, inherited assets, contacts, and wealth of friends and family who might provide support mechanisms (Krishna, 2004). Thus, the possibility of purchasing what is required to meet one's basic needs also increases, and this reduces the incentives for NEC as economies develop.

In addition, economic development is associated with higher rates of formality. The opportunity cost of starting a venture is higher in more-developed economies because it more often entails formal registration, fees, and taxes and because average wages are higher—in other words, higher transaction costs and, thus, higher entry barriers to entrepreneurship. This suggests that individuals who choose to become entrepreneurs in spite of the rather high opportunity costs they face in developed economies are likely to do it for OPP-related reasons and not just as a survival strategy (NEC). Furthermore, economic development also dictates the sophistication of the market: the more developed an economy, the higher the average purchasing power of consumers, the more sophisticated their demand for goods and services, and the more diversified the supply (Porter, 1990). Thus, in more-developed economies, it is harder to engage in entrepreneurial efforts that do not create value or innovate (and, hence, do not qualify as OPP) and yet offset their opportunity costs, precisely because of the higher transaction costs and higher sophistication of demand and supply. For example, in well-developed fast food markets, it is harder for an informal vendor to make a living. In less-developed economies, the formal supply of fast food is less diffused, which leaves a gap for informal supply. In a less-developed economy, it is easier to copy goods and services observed in wealthier contexts, and the demand for goods and services that can be easily provided is less saturated (Webb, Tihanyi, Ireland & Sirmon, 2009).

In very poor economies, incentives for OPP are scarce because the preconditions for the most productive kind of entrepreneurship may be absent or insufficient, whereas the same reasons generate strong incentives for NEC, channeling most entrepreneurial efforts to this sort of activity. There can be a kind of vicious cycle whereby the less developed the economy, the lower the incentives for OPP, which, in turn, hinder economic growth; however, the more developed

the economy, the higher the incentives for OPP, which provide the basis for further economic growth and development (Naudé, 2011; World Bank, 2010). Thus, we state the following:

**Hypothesis 3:** A country's level of economic development is negatively related to the probability that individuals will engage in necessity-based entrepreneurship.

**Hypothesis 4:** A country's level of economic development is positively related to the probability that individuals will engage in opportunity-based entrepreneurship.

### **Economic Development as a Moderator of the Effects of State Fragility on Entrepreneurial Efforts**

State fragility determines the types of entrepreneurial efforts through the incentives that the state and its institutions generate. As we have argued, the level of economic development also influences the incentives for OPP and NEC. State fragility tends to change gradually because of the institutional resistance to rapid change. On the other hand, GDP per capita can change abruptly due to several factors, such as exchange rates, commodity price fluctuations, or economic downturns. These GDP changes interact with state fragility, either enhancing or counteracting its effects on entrepreneurial efforts (Di John, 2008; Knack & Keefer, 1995). Thus, it is important to study the moderating effect of economic development on the relationship between state fragility and entrepreneurial efforts.

We assume that economic development moderates the effects of state fragility on entrepreneurial efforts because changes in wealth shape the way in which opportunities manifest themselves.

Households in developed economies have more resources to compensate for the effects of state fragility, such as public sector shortcomings with regard to support for the unemployed and the elderly or the extraction of bribes by corrupt officers in exchange for access to health services that are meant to be free and available to all citizens (Nay, 2013).

In less-developed economies, the average purchasing power is lower, and households have fewer assets, which lowers the number of people who can simply “buy themselves out” of state fragility. The need for extra income to purchase goods and services that fragile states fail to provide—e.g., accessible health services—pushes individuals into NEC-based entrepreneurial efforts (Banerjee & Duflo, 2007). This typically means self-employment for people who do not earn enough through their other sources of employment or for those who would otherwise not work, such as minors (World Bank, 2010).

Changes in economic development generate incentives for NEC even in the context of non-fragile states because NEC becomes a means to compensate for unforeseen reductions in household revenues (Williams & Vorley, 2015). However, when an economy grows, additional purchasing power and improved expectations can generate incentives for entrepreneurs to engage in OPP efforts, and this counteracts the hindering effects of state fragility on entrepreneurial efforts. This has been manifested in China, where the rise of entrepreneurial firms took place between 1990 and 2010, despite the presence of different dimensions of state fragility, such as high levels of corruption and cumbersome regulation (Ahlstrom & Bruton, 2002; Acs, 2006). During periods of economic growth, markets change and the opportunities for OPP multiply, leading individuals to take the risks associated with engaging in OPP in spite of state fragility.

Economic development also increases the opportunity cost of entrepreneurship because it increases average wages and tends to lead to more formalization of the job market (Acs, 2006), which should reduce the likelihood of NEC even in fragile states. Thus, improvements in economic development can counteract the effects of state fragility and alter the assumed incentives for OPP and the disincentives for NEC. In contrast, declines in economic development can enhance the effect of state fragility and, thus, generate further incentives for NEC and hinder OPP efforts. Accordingly, we propose that economic development moderates the effects of state fragility on individual entrepreneurial efforts of both the OPP and NEC types. Thus, we hypothesize:

**Hypothesis 5a:** The country's level of economic development positively moderates the relationship between state fragility and individuals' probability of becoming opportunity-based entrepreneurs.

**Hypothesis 5b:** The country's level of economic development negatively moderates the relationship between state fragility and individuals' probability of becoming necessity-based entrepreneurs.

## METHODOLOGY

We use a multi-level data set to test our hypotheses. Data were retrieved from five different sources, and, due the hierarchical structure of our model, we have two levels of data analysis: individual and country-year levels.<sup>3</sup> Our source for individual-level data is the GEM. The GEM's

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<sup>3</sup> Country-level; time-varying institutional indicators and controls.



methodology includes the Adult Population Survey (APS), which covers a representative sample of the population in each participant country (Autio et al., 2013; Reynolds et al., 2005). We use data from the nine-year period 2005–2013 to evaluate the evolution of the entrepreneurship dynamics. Our analysis includes 51 countries and covers responses from 956,925 individuals. The GEM survey has evolved over time, covering more countries, so the survey was not necessarily performed in each country for every year that we include in our analysis. We also introduce a restriction in order to capture the time dimension in our analysis, using only countries that reported at least four observations in the GEM (this represents 72% of the original number of countries and 90% of country-year observations).

Data for country-year variables were collected from different sources for the same period. We augmented the APS data with country-level data retrieved from the World Bank's World Governance Indicators (WGI), the GEM National Expert Survey, the Index of Economic Freedom from the Heritage Foundation, and financial indicators from the International Monetary Fund (IMF).

## **Measures**

### ***Individual-level Dependent Variables***

The GEM data contain various entrepreneurship indicators that have been constructed based on the adult population survey (APS). The GEM data provide both individual-level and aggregate country-level data about the adult working-aged (18–64 years old) population who are actively

involved in starting up a new venture. The Early-Stage Entrepreneurial Activity Index<sup>4</sup> offers two motivational derivations: necessity- and opportunity-based entrepreneurial activity. We test our hypotheses using these motivational variables as dependent variables,<sup>5</sup> defined as follows.

*Opportunity-Based Entrepreneurship.* The first of the dependent variables is the likelihood that an individual will be an opportunity-based entrepreneur; this comprises individuals who voluntarily create a new venture to pursue perceived business opportunities. These individuals have a “pull motive,” such as gaining independence or increasing personal or family income, challenge, status, and recognition (Reynolds et al., 2005). The respondents were coded as “1” if they met the criteria established by the GEM methodology and agreed with the following statement: “I’m in this start-up to take advantage of a business opportunity.” Otherwise, the respondents were given the value of “0.”

*Necessity-Based Entrepreneurship.* The second dependent variable is NEC. Individuals were coded as “1” if they, too, met the GEM criteria and agreed with the following: “I’m in this start-up because I have no better choices for work.” Otherwise, the respondents were given the value of “0.”

### ***Country-Level Predictors***

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<sup>4</sup> This index is based on the life-cycle of the entrepreneurial process, which is divided into two periods: the first covers nascent entrepreneurs who have taken some action to create a new business in the past year but have not paid any salaries or wages in the last three months; and the second includes owners/managers of businesses that have paid wages and salaries for more than three months but less than 42 months (Bosma et al., 2008).

<sup>5</sup> We also performed the analysis splitting the sample for nascent and owners/managers. The results, which are similar to those for the whole sample (early-stage entrepreneurs), are available on request.

*State Fragility*. In order to investigate the role of state fragility in entrepreneurial effort, we employ Ault and Spicer's (2014) measure on state fragility, which comprises a multidimensional construct derived from the six components of the World Bank's WGI (Kaufmann, Kraay & Zoido-Lobaton, 1999).<sup>6</sup> WGI comprises aggregate and individual governance indicators for 215 countries and territories for the 1996–2013 period. The WGI covers six dimensions of governance: voice and accountability; political stability and absence of violence; government effectiveness; regulatory quality; rule of law; and control of corruption. In essence, the six dimensions of the WGI cover the key aspects of state fragility (Ault & Spicer, 2014; Engberg-Pedersen et al., 2008; McLoughlin, 2012). WGI data have been used in other entrepreneurship studies as a measure of the quality of formal governance institutions (Dau & Cuervo-Cazurra, 2014; Kim & Li, 2014; Levie & Autio, 2011; Thai & Turkina, 2014). Building on Ault and Spicer (2014), we average the six governance indicators and use the measure as a proxy for state fragility. The rationale for using state fragility instead of examining individual formal institutions, such as the rule of law, is that the different dimensions of state fragility are linked to each other and have been found to be highly correlated. The protection of private property rights—one of the most basic market-supporting institutions—depends not only on the regulatory framework, but also on the rule of law and the absence of threats from corrupt officials, criminals, or armed groups (Acemoglu & Robinson, 2012). Political instability and violence can severely undermine a state's capacity to provide public goods, enforce the rule of law, and prevent corruption, thus threatening all formal institutions (Collier, 2009; Di John, 2008). State fragility allows us to study differences in cross-country contexts and their effects on

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<sup>6</sup> For more information, see <http://info.worldbank.org/governance/wgi/index.asp>.

entrepreneurship in an encompassing way, in line with the established practice of development economists and multilateral organizations (Baliamoune-Lutz & McGillivray, 2008; UNDP, 2011). For convenience in interpreting the results and given our hypotheses, we take the inverse of the measure so that a higher number will denote a more fragile state. Ranges from approximately -2.5 (low fragile state) to 2.5 (high fragile state).

*Economic Development.* We measure economic development using GDP per capita (Aidis, Estrin, & Mickiewicz, 2012; Stephan et al., 2015b). We adjust our measure of GDP using purchasing power parity (PPP) in international US dollars, and we use this measure in our regressions as the logarithm of GDP in order to improve the interpretation of the results. Data came from the IMF's International Financial Statistics dataset.

*Country-Level Control Variables.* In order to test the influence of additional formal institutions, we use two sub-indices from the GEM's National Expert Survey. The first item, *government support and policies*, reflect national experts' perceptions of the state of entrepreneurship-specific policy conditions aimed at enhancing new venture creation and entrepreneurial efforts in a country. The second item, *burden of taxes and bureaucracy on entrepreneurship activities*, measures national experts' perceptions of how taxes and different regulatory tasks burden entrepreneurial efforts in a country (Levie & Autio, 2008). For both measures, a lower value denotes the poor state of government support and possible formal burdens on entrepreneurial efforts. See Appendix 1 for a detailed explanation of these variables.

We also use business freedom measures based on the Heritage Foundation's Index of Economic Freedom. The Heritage Foundation has produced this index in partnership with *The Wall Street Journal* for the last 20 years, using it to track the level of economic freedom in 186 countries

around the world.<sup>7</sup> Specifically, we use labor and trade freedom<sup>8</sup> to capture some additional regulatory burden associated with entrepreneurial activity (Stenholm et al., 2013). *Labor freedom* is associated with the ability of business to hire and dismiss redundant workers, whereas labor rigidity undermines the capacity of entrepreneurs to be flexible in a changing environment. *Trade freedom* measures the economy's openness to the flow of goods and services, whereas trade limitations and regulations put, for example, advanced-technology products and services beyond the reach of local entrepreneurs. For both measures, a higher value (0-100 scale) means more freedom in a country. Finally, we control the analysis for the *unemployment rate* as a percent of the total labor force, acquired from the IMF's International Financial Statistics dataset. Unemployment is likely to be related mainly with NEC activities, precisely due to the lack of formal employment in a given economy.

*Individual-Level Control Variables.* Following previous research (see, for example, Autio et al., 2013), we include three attitude variables that have been linked to entrepreneurial behaviors: a proxy for the use of *social capital* referred to as knowing other entrepreneurs; the individual's perceived *self-efficacy* in entrepreneurial efforts; and the *fear of failure* when undertaking new business venture activities. The three variables were obtained from the GEM APS data, and they all are single items with dichotomous scales for which the value of 0 means "No" and the value of 1 means "Yes."

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<sup>7</sup> For more information, see <http://www.heritage.org/index/about>.

<sup>8</sup> We include only the trade and labor freedom measures of the Heritage Foundation Economic Freedom Index because its other components, such as "freedom of corruption," are similar and, therefore, highly correlated with the measures of state fragility that we use in our empirical model.

1. *Knowing Other Entrepreneurs.* Knowing other entrepreneurs has a positive effect on the probability of becoming an entrepreneur (Kwon & Arenius, 2010). This measure reflects individuals' access to social capital, which may influence their entrepreneurial efforts. Respondents were asked whether they personally knew someone who had started a business in the two years preceding the survey.
2. *Self-Efficacy.* Self-efficacy is based on responses about whether the individual perceived that he or she has the knowledge, skill, and experience required to start a new business (Arenius & Minniti, 2005).
3. *Fear of Failure.* This variable measures the individual's lack of confidence to cope with the potential problems (including failure) that could occur during the new business venture process (Autio et al., 2013). Respondents were asked specifically whether fear of failure would prevent them from starting a business.

*Education.* The skill-enhancing effect of education influences entrepreneurial activity: highly educated entrepreneurs will recognize more opportunities (Known & Arenius, 2010; Autio et al., 2010). We calculate a dichotomous variable using answers from GEM individual-level APS data about whether the individual had achieved more than a secondary education (0 = "No"; 1 = "Yes").

*Gender.* Also taken from the GEM, our gender variable takes the value of 1 if the respondent is male and 0 if the respondent is female. Cross-country studies on entrepreneurial behavior have shown that early-stage entrepreneurship varies significantly by gender (Bosma et al., 2008; Stephan et al., 2015b).

*Age and Age Squared.* Age is an important factor in entrepreneurial activity (Levesque & Minniti, 2006). With younger individuals showing higher levels of entrepreneurial activity, age squared is regularly also included to capture any non-linear effects (Estrin et al., 2013b; Stephan et al., 2015b). The variable is the exact age of the respondent from the GEM APS at the time of the interview.

Table 1 lists summary statistics at the country level.

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Insert Table 1 about here  
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## **Data Analysis**

Because we use two levels of analysis, we analyze the data using hierarchical linear modeling (HLM) methods. Multilevel modeling is appropriate when data are hierarchically structured—that is, when they consist of units grouped at different levels of a hierarchy. In our case, individuals belong to a determined region (Aguinis et al., 2013; Rabe-Hesketh & Skrondal, 2006). Using standard multivariate methods, the assumption of independence of observations could be violated (Hofmann, Griffin, & Gavin, 2000). In other words, we would assume that individuals act homogeneously, without taking into account the effect of the environment on their decisions. In the case of institutions and entrepreneurship, we observe the same hierarchical structure, with individuals in the first level and country-time in the second level. Similarly, Autio et al. (2013) demonstrate the utility of a multilevel approach in studies of institutions and entrepreneurship, and they encourage GEM data entrepreneurship research to use this approach.

We first test whether the choice of multilevel modeling with country-year effects is justified; we find that the random intercepts are statistically significant for our two dependent variables.<sup>9</sup> Consistent with our theoretical focus, our dependent variables measure early entrepreneurship activity by individuals. The first dependent variable is OPP, and the second is NEC:

$$Y_{ijt} = \beta_0 + \beta_{1-2}Country\_pred_{jt} + \beta_{3-9}Indiv\_controls_{ijt} + \beta_{10-11}Country\_controls_{jt} + \mu_{ijt} + \varepsilon_{jt},$$

where  $Y_{ijt}$  are the dependent variables (OPP or NEC);  $Country\_pred_{jt}$  are the country predictors;  $Indiv\_controls_{ijt}$  are the individual controls; and  $Country\_controls_{jt}$  are the country control variables (in Tables 2 and 3, see the descriptive statistics and correlations of the controls, predictors, and dependent variables). The combination of  $\mu_{ijt} + \varepsilon_{jt}$  represents the random part of the equation, where  $\varepsilon_{jt}$  are the country-level residuals, and  $\mu_{ijt}$  are the individual-level residuals.

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Insert Table 2 and Table 3 about here  
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## RESULTS

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<sup>9</sup> We run an estimation model with only the country-year effect to test the null hypothesis that the between-country-year variance is non-zero for the two dependent variables. The test statistic for OPP is  $\text{chibar}^2(01) = 23288$ ,  $\text{Prob} \geq \text{chibar}^2 = 0.0000$ , and the test statistic for NEC is  $\text{chibar}^2(01) = 20111$ ,  $\text{Prob} \geq \text{chibar}^2 = 0.0000$ .



To investigate potential multicollinearity problems, we calculate variance inflation factors (VIFs) for all our variables (Table 4). VIF values greater than ten indicate reasons for concern due to collinearity among the variables, and tolerance values less than 0.1 indicate collinearity among variables. Therefore, our values do not suffer from collinearity.

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 Insert Table 4 about here  
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Table 5 shows the estimation results. Models 1 and 2 show the control variable models. Models 3 and 4 explain OPP and NEC, respectively, as proposed in equation 1. Models 5 and 6 introduce for the previous specification an interaction term between the GDP level and state fragility.

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 Insert Table 5 about here  
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With regard to state fragility, we observe that in more-fragile countries, the individual-level probability of OPP activity decreases ( $\beta = -0.134, p < 0.1$ ). Although the significance level is low, we observe a negative relationship, and the effect on NEC-based entrepreneurial efforts is significant and positive ( $\beta = 0.197, p < 0.05$ ). This means that an increase of one standard deviation in the state fragility increases the probability that an individual will engage in NEC efforts by 0.3 percentage point. Thus, our results provide weak support to Hypothesis 1, but they support strongly the Hypothesis 2.

We observe that increases in country-level GDP raise the likelihood of entry into OPP ( $\beta = 0.318, p < 0.01$ ); the opposite happens in the case of NEC. If the country has a low level of

development ( $\beta = -0.220, p < 0.01$ ), the likelihood of individuals engaging in entrepreneurial activities motivated by necessity increases. For example, in a country with a GDP per capita of 10,000USD, the average estimated probability of engaging in OPP is 5.1%, while in a country with 20,000USD, the average estimated probability increases to 6.3%. In the same exercise applied to NEC, the probabilities change from 2.25% to 1.94%, respectively. These results support Hypotheses 3 and 4.

We find a negative, albeit non-significant, effect for the interaction between state fragility and the level of economic development on OPP-based entrepreneurial efforts (Model 5). Although this negative effect is in line with the arguments of Hypothesis 5a, it is not supported.

With regard to Hypothesis 5b, we find a significant and negative interaction effect between state fragility and countries' level of economic development ( $\beta = -0.0949, p < 0.05$ ). The marginal effect is clearly represented in Figure 1, in which the constant line represents the marginal effect of state fragility on NEC considering the GDP per capita in its mean value; the decreasing line shows the marginal effect evaluated for different GDP per capita levels. Figure 2 shows the predicted probability of engaging in NEC-based entrepreneurial efforts as a function of state fragility moderated by the country's level of economic development. We observe that as a country improves its quality of governance (i.e., less state fragility), the likelihood of NEC decreases, but this effect is stronger in less-developed economies. At higher levels of economic development, improvements in governance quality have fewer effects on the likelihood of individuals engaging in NEC.

The coefficients associated with individual-level controls related to attitudinal entrepreneurial behavior are stable in all the specifications shown, which is relevant in order to explain the

robustness of the results. An analysis of the individual-level control variables shows that the probability of becoming an opportunity-based entrepreneur increases with higher levels of education, while the opposite occurs with necessity-based entrepreneurship. This is consistent with previous research that demonstrates that a higher education level increases the probability of becoming involved in pro-growth, OPP new business (Kwon & Arenius, 2010; Levie & Autio, 2008). Also, if the individual is a male, the likelihood of engaging in OPP efforts increases, but the effect is not significant in the case of NEC-based entrepreneurial efforts.

Regarding the country-level controls (reported in Table 5), all the models have similar behavior in terms of capturing the stability of the outcomes. However, there are disparities in the impact on individual-level OPP and NEC efforts. For example, the unemployment rate decreases OPP but increases NEC. This is also consistent with some empirical evidence that unemployment prompts individuals to undertake entrepreneurial activities as a labor option (Williams et al., 2016). The influence of additional entrepreneurial framework conditions, such as government support policies reported by experts in each country (retrieved from the national experts survey in the GEM), have a positive impact only in the case of OPP activity.

We estimate a pull model only at the country level, using traditional ordinary least squares estimation (available from the authors upon request) to verify the robustness of our results. We find that state fragility has similar effects on the propensity of the population to engage in entrepreneurship activities—negative for OPP and positive for NEC—which supports our original results.

## **DISCUSSION**

We study the contextual drivers of necessity-based and opportunity-based individual entrepreneurial efforts from a cross-national comparative perspective. Our results confirm that state fragility reduces incentives to engage in opportunity-driven entrepreneurial efforts (OPP), and that it increases the incentives for necessity-driven entrepreneurial efforts (NEC). This outcome is consistent with the tenets of new institutional economics (North, 1990; Minniti 2008), the work of Baumol (1990), and previous work on national rates of entrepreneurial effort type (McMullen et al., 2008; Bowen and DeClercq, 2008). McMullen et al. (2008), for example, find that better protection of property rights, a feature of non-fragile states, enhances national rates of OPP efforts, whereas Bowen and DeClercq (2008) find a negative correlation between corruption, a typical characteristic of fragile states, and high-growth entrepreneurship.

Our results highlight that state fragility is linked not only with *country-level*, but also with *individual-level*, incentives to engage in entrepreneurial efforts. State fragility decreases the likelihood of engaging in OPP efforts because of uncertainty about the rules and their enforcement mechanisms that protect an entrepreneur from contractual breach, intellectual property theft, and other events that can threaten the potential to obtain rents from entrepreneurial activities.

Previous work on the contextual drivers of entrepreneurial efforts (Bowen and DeClercq, 2008; Levie & Autio, 2010) focus mainly on the contextual drivers of OPP efforts. Our analysis sheds novel light on the determinants of NEC efforts. Our findings show that state fragility amplifies the incentives for NEC-based entrepreneurial efforts. State fragility can push individuals towards NEC through different mechanisms. In fragile states, extortion, bribe extraction, political violence, and a weak rule of law, among other factors, can cause extra expenditures for

households, making it necessary for them to engage in NEC efforts to maintain the same level of income. State fragility might also entail that citizens get access to services that should be provided for free—such as health care or rule enforcement only upon the payment of bribes, again causing an increase in the necessary expenditures faced by households. All of the factors mentioned above can potentially result in a push for NEC efforts.

The high transaction costs associated with state fragility because of impediments such as red tape and inefficient courts can generate barriers for OPP efforts, but they might not prevent individuals from engaging in NEC if it is the only way that they can meet their needs. State fragility requires that rules change frequently and unpredictably, and corrupt and malfunctioning government institutions distort their enforcement (Dutta & Sobel, 2016). In this context, individuals face not only high transaction costs to start a business, but also multiple mechanisms, to avoid these transaction costs, such as corruption, informality, and non-compliance with the law, especially when engaging in NEC efforts (Dau & Cuervo-Cazurra, 2014; Thai & Turkina, 2013). This argument is in line with Valdez and Richardson's (2013) results, and it supports Baumol's (1990) arguments on differences in allocation of entrepreneurial efforts. Our findings also support the observation that in poor economies and in fragile states, having a large number of entrepreneurs does not necessarily boost economic development because their existence is highly linked to necessity efforts (Shane, 2009).

In addition to the role of state fragility, our findings show that economic development is positively associated with OPP and negatively associated with NEC efforts. With regard to these findings, McMullen et al. (2008) find that GDP—their proxy for employment opportunities—is negatively correlated with national-level rates of both OPP and NEC efforts. Our results show

that, when examining individual entrepreneurial endeavors in a larger sample with a multi-level approach and controlling for a more extensive number of factors, including unemployment, GDP affects the likelihood of entrepreneurial engagement, although the effect differs according to the type of entrepreneurial effort. In our model, at lower levels of GDP, individuals are more likely to engage in NEC efforts and less likely to engage in OPP efforts. At higher levels of GDP, individuals are less likely to engage in NEC, but also *more* likely to engage in OPP efforts. Our results provide rigorous empirical support to previous studies that discuss NEC-based entrepreneurial efforts as a phenomenon typical of less-developed economies, and that document the higher prevalence of OPP efforts in more-developed economies (Banerjee & Duflo, 2007; Shane, 2009; Wennekers et al., 2010).

With regard to McMullen et al.'s (2008) work on the role of a country's state of employment, our findings on unemployment show that it influences both OPP- and NEC-based individual-level entrepreneurial efforts. Our results show that higher levels of unemployment increase the likelihood of NEC and decrease the likelihood of OPP efforts. Unemployment means lower job opportunities and, thus, a push for NEC, which is in line with the idea of entrepreneurship as an alternative source of income when there are no other opportunities (Baumol, 1990; Reynolds et al., 2005; Williams et al., 2016). With higher employment levels, entrepreneurial efforts seem to be directed to NEC instead of to OPP efforts, the type of entrepreneurial activities that can support economic growth and development. We find that the likelihood of OPP efforts increases when unemployment is low. Our findings deviate from the arguments of McMullen et al. (2008), and this could be explained by the fact that we study a different sample (longitudinal and more countries) and use a different model—examining individual entrepreneurial efforts, not national entrepreneurial rates—and include a broader set of control variables.

One of the key contributions of this study is that we show that economic development moderates the effects of state fragility on entrepreneurial efforts. Our results show that as an economy develops, the influence of state fragility on NEC efforts decreases. The level of economic development determines the extent to which a state can obtain resources via, for example, taxation. In poor economies, NEC activities are not linked just to the absence of alternative employment sources, but also to the need to compensate with cash for sub-optimal access to basic public goods (Naudé, 2011; World Bank, 2010). Therefore, improvements in state fragility can have strong implications for poorer contexts. For example, if a country manages to improve its security through less-corrupt and better-trained police, individuals might be able to commute to formal jobs located in areas that previously were too dangerous to access, and, thus, they might disengage from NEC-based entrepreneurial efforts. The more a country develops, the more resources individuals and government agencies can employ to limit the negative effects of state fragility and, thus, considerably lessen the state fragility's incentives for NEC efforts.

Finally, our study contributes to the body of research on the role of national context in entrepreneurship by employing a larger sample of countries than previously studied. This larger sample introduces more variation in the levels of economic development and state fragility examined. A large share of the additional countries included in our analysis are emerging economies, characterized by more violent fluctuations in GDP and more dramatic overall transformations (Ciravegna, Fitzgerald & Kundu, 2013). It is possible that the mechanisms we observed have not appeared in previous studies because they examined smaller samples, mainly of developed economies. Finally, by extending the time series, we also include more points of observation where GDP levels change due to economic downturns or growth spurts, as called for by Valdez and Richardson (2013).

## **Limitations and Implications for Future Research**

We adopt a novel empirical approach using a large dataset enabling state-of-the-art multilevel models (Stephan et al., 2015b). Yet avenues for future research on the relationship between entrepreneurial activity and institutions are still open. With regard to state fragility, our results are exploratory, and, thus, some of the related limitations provide opportunities for future research. First, as Stephan et al. (2015a) suggest, the contextual drivers of entrepreneurial motivation are more complex than the mere NEC versus OPP dichotomy. Thus, a closer look at the motivational variation within the NEC and OPP categories would open up a means for novel contribution. For instance, OPP-based entrepreneurial efforts might comprise efforts through which individuals seek to increase either their independence or their personal income (Bosma et al., 2008), and not only to exploit a recognized opportunity. Thus, the motivational differences among opportunity-driven entrepreneurs and their institutional determinants across nations and over time warrant further investigation. Further work could address differences in the allocation of entrepreneurial effort (Baumol, 1990) between formal and informal OPP and NEC activities, extending the work of Dau and Cuervo-Cazurra (2014), Thai and Turkina (2014), and Williams et al. (2016). For example, variables including the formal registration of new firms versus informal sectors could be interesting to test with other types of institutional proxies across countries.

We acknowledge that our measure of state fragility may not capture all of its dimensions and focuses mainly on the quality of formal institutions. Future research could further extend the work of Ault and Spicer (2014), including different measures of state fragility and its effects on entrepreneurial behavior.



Our approach excludes some relevant aspects generated by the heterogeneity within countries and the ways in which national institutions might regionally shape different types of entrepreneurship. Research that highlights less-developed countries or regions will provide more insights into the complex relationships among economic development, formal (and informal institutions) and new business creations motivations (Acs et al., 2013; Bruton et al., 2008; Williams et al., 2016).

Finally, our analysis does not include the effect of informal institutions. In order to extend the research agenda on cross-country determinants of different types of entrepreneurial efforts, it will be important to also study the effect of informal institutions (Bruton et al., 2008).

### **Implications for Practice**

Our findings have important implications for public policy. Since OPP is more likely than NEC to advance a country's economy (Valdez & Richardson, 2013), policymakers share an interest in finding ways to support OPP-based entrepreneurial efforts. We find support for the argument that stronger formal institutions support the sort of entrepreneurship that has a better potential impact on economic development (Baumol, 1990; Levie & Autio, 2011). This means that improving the quality of formal institutions is a fundamental step toward ensuring that individuals undertake entrepreneurial efforts to pursue opportunities, and not only to provide necessities. Our findings highlight that reducing state fragility has stronger effects on NEC in poorer economies, in which NEC may be the only option for escaping destitution (Banerjee & Duflo, 2008). Improved state fragility leads to a lower likelihood of NEC, presumably as more people enter into formal labor markets and meet their basic needs. Improved state fragility entails not only better regulatory frameworks, but also higher state efficiency at integrating the poor into the workforce and providing basic public goods, which reduces the need for self-reliance (Ault & Spicer, 2014). In

more-developed economies, reducing state fragility becomes more important to support OPP than to reduce NEC efforts, suggesting that there may be different types of NEC, depending on the average living conditions found in different countries.

Leibenstein (1968: 83) suggests that public policy should focus on “*the gaps, obstructions, and impediments in the market network of the economy in question and on the gap filling and input completing capacities and responsiveness to different motivational states of the potential entrepreneurs in the population.*”

If developing countries do not make the promotion of productive entrepreneurship a main concern in their policy agendas, they will only reduce NEC efforts without achieving higher growth through OPP efforts (Wennekers et al., 2005). Developing countries must rationally organize their functions, improve their governance, and remove the barriers that hamper entrepreneurial activity of the OPP type rather than focusing only on reducing unemployment and NEC. They need to protect and stimulate property rights and introduce policies that support the creativity and efficiency of the private sector. With an adequate environment, especially with the reduction of state fragility, entrepreneurship can help improve the economic and social conditions in developing economies.

## CONCLUSION

We extend the research of scholars such as McMullen et al. (2008) and Bowen and DeClercq (2008) by examining the relationship between state fragility and the type of entrepreneurial efforts through a multi-level lenses. This allows us to capture the interaction between country

features and individual-level motivation behind entrepreneurial efforts. We contribute to the existing scholarly interest in individual entrepreneurial efforts by investigating a larger, more diverse sample of countries over a longer time period than in previous multi-level studies (DeClercq et al., 2013; Valdez & Richardson, 2013). We show the effects of state fragility, a construct that captures the institutional and governance framework needed for economic development, on different types of entrepreneurial efforts (OECD DAC, 2007). Our study of the relationships linking institutional context, individual entrepreneurial behavior, and economic development provides rigorous empirical support for the theoretical work of Baumol (1990) and for the institutional theory perspective of entrepreneurship (Williams et al., 2016; Webb & Ireland, 2015).

We illustrate that state fragility hinders opportunity-based entrepreneurial efforts and fosters necessity-based entrepreneurial efforts. Our findings also show a not-yet-discussed moderation effect—that economic development negatively moderates the relationship between state fragility and NEC efforts. Accordingly, state fragility increases individuals' likelihood of engaging in necessity-driven entrepreneurial efforts, *especially* in less-developed economies. Because all types of entrepreneurial engagement face constant uncertainty and environmental changes, state fragility reduction seems to be particularly important in enabling the transition from NEC to OPP efforts. This is consistent with Baumol's (1990) argument that the formal institutional context is likely to affect the allocation of entrepreneurial activity in different ways. In all, our findings suggest that researchers employing institutional theory should focus on how formal institutions operate and how their quality, as well as the overall governance environment, influences individuals' engagement in entrepreneurship, interacting with other contextual factors, such as economic development.

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**Table 1: Country-level descriptive statistics and mean values of all the variables**

Country	N	NEC (%)	OPP(%)	Know Entrep	Self-efficacy	Fear of Failure	Age	Gender	Education	Unemploy	In_gdp	State fragility	Labor Freedom	Trade Freedom	Government support and policies	Taxes and bureaucracy
Angola	7,615	8.7%	18.8%	0.69	0.66	0.36	31.98	0.54	0.11	6.86	8.42	1.03	44.0	69.2	2.65	2.19
United Arab Emirates	9,016	0.9%	6.9%	0.40	0.61	0.36	33.23	0.69	0.36	3.79	10.58	-0.50	74.0	78.8	3.47	3.31
Argentina	15,594	4.8%	9.8%	0.39	0.64	0.32	38.46	0.46	0.22	8.36	9.23	0.29	46.0	66.5	1.91	1.61
Australia	7,241	1.3%	7.8%	0.35	0.54	0.38	42.13	0.42	0.26	5.01	10.74	-1.59	89.5	80.7	2.40	2.61
Belgium	21,018	0.5%	3.0%	0.28	0.41	0.35	42.24	0.47	0.25	7.88	10.68	-1.31	69.7	85.0	2.98	2.30
Bosnia & Herzegovina	11,864	3.8%	3.3%	0.35	0.55	0.37	41.89	0.47	0.15	26.67	8.42	0.34	58.4	82.9	1.96	1.75
Brazil	33,973	5.1%	10.0%	0.38	0.54	0.39	37.42	0.48	0.09	6.81	9.23	0.00	59.9	69.6	2.23	1.57
Switzerland	15,542	0.8%	5.1%	0.36	0.48	0.33	42.03	0.48	0.15	4.21	11.13	-1.71	81.1	86.8	3.08	3.24
Chile	33,645	4.5%	12.9%	0.45	0.64	0.31	39.21	0.46	0.24	7.51	9.42	-1.18	75.5	84.3	2.79	2.75
China	25,195	6.7%	9.6%	0.58	0.40	0.33	38.52	0.48	0.19	4.27	8.32	0.54	59.6	69.5	2.75	2.66
Colombia	39,410	5.7%	14.3%	0.34	0.61	0.32	37.91	0.47	0.30	11.29	8.79	0.34	74.4	72.1	2.75	2.40
Germany	41,389	1.3%	4.1%	0.34	0.46	0.44	42.90	0.48	0.27	7.62	10.64	-1.46	43.8	85.3	2.94	2.57
Denmark	24,182	0.2%	4.3%	0.43	0.39	0.40	42.00	0.47	0.21	5.03	10.92	-1.85	98.0	84.4	3.08	3.02
Algeria	12,486	2.5%	6.0%	0.56	0.56	0.35	35.54	0.54	0.29	10.38	8.56	0.88	53.8	71.1	3.23	2.69
Ecuador	10,239	7.3%	15.2%	0.39	0.74	0.36	37.84	0.46	0.09	5.21	8.49	0.76	41.8	69.7	2.53	2.05
Spain	225,256	1.1%	4.2%	0.33	0.49	0.49	42.24	0.50	0.25	16.20	10.34	-0.87	50.2	85.6	2.60	2.48
Finland	18,091	0.9%	4.4%	0.49	0.40	0.35	41.76	0.50	0.18	7.69	10.75	-1.86	45.2	85.6	3.34	3.19
France	15,853	0.9%	3.5%	0.41	0.35	0.47	41.15	0.47	0.22	9.09	10.65	-1.22	53.8	81.7	3.29	2.88
UK	126,315	0.7%	3.9%	0.26	0.50	0.36	43.92	0.41	0.12	6.07	10.67	-1.44	78.7	84.9	2.91	2.52
Greece	17,923	1.7%	4.9%	0.35	0.53	0.62	40.80	0.49	0.25	13.99	10.16	-0.49	53.5	81.7	2.09	1.98
Guatemala	8,885	4.2%	9.7%	0.46	0.68	0.33	34.70	0.47	0.03	3.44	8.02	0.59	53.5	83.1	1.83	2.19
Croatia	15,598	2.8%	4.5%	0.38	0.58	0.42	41.71	0.45	0.20	12.41	9.51	-0.37	43.8	84.5	2.18	1.88
Hungary	18,798	1.8%	4.7%	0.30	0.42	0.39	40.29	0.49	0.18	9.14	9.46	-0.78	68.1	83.6	1.99	1.74
Indonesia	11,131	2.2%	6.5%	0.47	0.57	0.36	35.16	0.58	0.18	3.82	7.11	0.28	69.1	52.9	2.44	2.10
Ireland	15,185	1.4%	5.4%	0.37	0.49	0.39	42.14	0.44	0.32	9.63	10.88	-1.50	78.9	85.7	2.99	2.83
Iceland	11,426	0.8%	9.1%	0.62	0.55	0.37	40.67	0.47	0.13	4.12	10.88	-1.67	64.3	83.3	2.87	3.82
Israel	11,361	1.4%	4.6%	0.37	0.38	0.46	38.67	0.47	0.42	6.78	10.31	-0.57	65.0	85.4	2.17	1.93
Italy	18,317	0.6%	2.7%	0.29	0.41	0.48	43.49	0.48	0.10	8.24	10.50	-0.55	63.8	83.4	2.14	1.75
Jamaica	16,942	7.3%	12.2%	0.51	0.80	0.30	36.85	0.47	0.09	11.72	8.47	0.02	68.9	70.3	2.34	1.99
Japan	16,676	1.0%	2.8%	0.21	0.15	0.40	43.20	0.48	0.31	4.35	10.58	-1.22	82.6	81.3	2.60	2.12
Latvia	17,932	2.1%	6.5%	0.40	0.44	0.41	40.92	0.47	0.20	11.92	9.42	-0.65	62.9	85.6	2.48	2.54
Mexico	11,553	0.8%	5.7%	0.49	0.33	0.40	39.60	0.58	0.18	4.77	9.15	0.15	61.0	75.6	2.94	2.63
Macedonia, fyr	7,744	4.4%	3.5%	0.37	0.55	0.41	40.81	0.45	0.24	31.37	8.49	0.08	76.0	83.7	2.46	2.80
Montenegro	10,316	1.5%	7.6%	0.49	0.59	0.32	35.94	0.49	0.15	19.06	8.72	-0.07	83.7	83.3	2.85	2.16
Netherlands	23,153	0.6%	5.9%	0.36	0.45	0.32	43.35	0.45	0.19	4.34	10.81	-1.66	61.3	85.5	2.65	2.80
Norway	15,385	0.5%	6.3%	0.39	0.40	0.31	42.63	0.49	0.33	3.32	11.39	-1.72	47.7	87.9	2.33	2.73
Panama	8,003	3.5%	11.3%	0.43	0.59	0.20	37.72	0.47	0.17	4.80	9.07	-0.09	41.7	75.4	2.53	2.94
Peru	15,598	6.7%	18.7%	0.55	0.74	0.33	36.00	0.48	0.14	4.17	8.46	0.28	57.6	79.3	2.30	2.14
Portugal	10,035	1.3%	5.8%	0.30	0.51	0.47	39.81	0.50	0.24	12.71	10.00	-0.95	35.4	87.1	2.45	1.90
Russia	21,994	1.2%	2.8%	0.35	0.27	0.48	39.87	0.45	0.58	6.44	9.36	0.74	45.2	60.6	2.35	2.01
Singapore	11,673	1.0%	6.5%	0.26	0.30	0.39	39.24	0.50	0.22	3.50	10.55	-1.49	96.0	86.7	3.50	4.00
Slovenia	24,126	0.6%	4.0%	0.46	0.52	0.35	41.17	0.47	0.18	6.61	10.04	-0.95	41.8	85.6	2.38	2.05
Sweden	13,161	0.5%	4.3%	0.45	0.43	0.36	43.36	0.48	0.22	7.74	10.87	-1.76	58.5	84.9	2.63	2.38
Thailand	13,362	4.1%	12.4%	0.35	0.43	0.56	40.05	0.45	0.23	0.94	8.36	0.24	76.5	73.0	2.68	2.43
Trinidad & Tobago	6,565	2.5%	14.9%	0.40	0.78	0.19	37.38	0.50	0.36	5.38	9.81	-0.12	77.3	75.5	2.54	2.40
Turkey	47,365	3.1%	6.1%	0.34	0.55	0.33	39.27	0.64	0.34	10.12	9.25	0.07	42.1	84.9	2.76	2.54
Uganda	9,126	13.0%	18.3%	0.68	0.86	0.22	32.65	0.46	0.06	4.09	6.46	0.59	87.9	73.6	2.39	1.98
Uruguay	13,061	2.9%	8.4%	0.39	0.65	0.33	39.40	0.45	0.13	7.66	9.25	-0.76	74.3	82.0	2.36	2.38
USA	27,884	2.1%	8.1%	0.31	0.58	0.33	44.13	0.49	0.42	7.57	10.80	-1.25	95.6	85.8	2.78	2.44
Venezuela	7,031	6.8%	12.8%	0.48	0.69	0.26	36.75	0.42	0.11	8.81	8.96	1.17	33.6	61.2	1.88	1.61
South Africa	16,734	2.0%	4.5%	0.35	0.43	0.29	35.54	0.49	0.05	23.81	8.73	-0.30	57.7	76.2	2.93	2.05

Notes: N is the number of observations  
All the variables in their mean values over the sample period  
NEC: average % of respondents that declare to be in a start up because they have no better choices at work  
OPP: average % of respondents that declare to be in a start up to take advantage of a business opportunity  
Gender is coded Male=1 Female=0  
Education takes value of 1 if individuals completed secondary education

**Table 2: Descriptive statistics**

LEVEL-1 Variables	N	Mean	Std.Dev	Min	Max
NEC	1,009,591	0.03	0.16	0	1
OPP	1,009,591	0.07	0.26	0	1
Know Entrep	998,708	0.37	0.48	0	1
Self-Efficacy	1,009,591	0.51	0.50	0	1
Fear of Failure	979,907	0.39	0.49	0	1
Age	1,009,591	40.49	12.93	18	64
Gender	1,009,390	0.49	0.50	0	1
Education	1,009,591	0.25	0.43	0	1

LEVEL-2 Variables	N	Mean	Std.Dev	Min	Max
Unemploy	356	8.61	5.77	0.70	33.80
ln_gdp	360	9.72	1.06	6.37	11.54
State fragility	359	-0.71	0.76	-1.90	1.26
Labor Freedom	357	62.59	16.29	30	100
Trade Freedom	357	79.96	8.64	24	90
Government support and policies	356	2.57	0.46	1.59	3.67
Taxes and bureaucracy	356	2.40	0.56	1.33	4.27

**Table 3: Correlation matrix of the main variables analyzed**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) NEC	1							
(2) OPP	-0.0399*	1						
(3) Know Entrep	0.0619*	0.1618*	1					
(4) Self-Efficacy	0.0967*	0.2052*	0.2409*	1				
(5) Fear of Failure	-0.0241*	-0.0897*	-0.0481*	-0.1507*	1			
(6) Age	-0.0269*	-0.0676*	-0.1231*	-0.0146*	0.0082*	1		
(7) Gender	0.0130*	0.0653*	0.0964*	0.1383*	-0.0697*	-0.0258*	1	
(8) Education	-0.0127*	0.0365*	0.0260*	0.0396*	0.0171*	-0.0291*	0.0218*	1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) NEC	1								
(2) OPP	-0.0378	1							
(3) Unemploy	-0.0238	-0.1078	1						
(4) ln_gdp	-0.0822	-0.1872*	-0.2038*	1					
(5) State fragility	0.0562	0.1944*	0.1786*	-0.8542*	1				
(6) Labor Freedom	0.0155	-0.0624	-0.152	0.1313	-0.2956*	1			
(7) Trade Freedom	-0.1009	-0.1787*	0.1176	0.6371*	-0.6787*	0.1533	1		
(8) Government support and policies	0.0206	-0.0956	-0.1838*	0.3396*	-0.4056*	0.2978*	0.2011*	1	
(9) Taxes and bureaucracy	0.0113	-0.1176	-0.2941*	0.4489*	-0.5418*	0.3125*	0.3253*	0.7247*	1

\*Represents statistical significances at  $p < 0.05$ .

We use the sample size that was used to test our hypotheses.

**Table 4: Multicollinearity test on variables**

Variable	VIF*	Tolerance**
Gender	1.0	0.97
Age	1.0	0.96
Fear of Failure	1.0	0.96
Education	1.1	0.94
Know Entrep	1.1	0.92
Self-Efficacy	1.1	0.90
State fragility	5.6	0.18
ln_gdp	4.5	0.22
Unemploy	1.4	0.72
Taxes and bureacracy	2.6	0.39
Government support and policies	2.3	0.44
Trade Freedom	2.4	0.42
Financial Freedom	1.3	0.75

\*VIF values greater than 10 indicate reasons for concern due to collinearity among variables.

\*\*Tolerance values less than 0.1 indicate collinearity among variables. Our values do not suffer from collinearity.

**Table 5: Multilevel analysis**

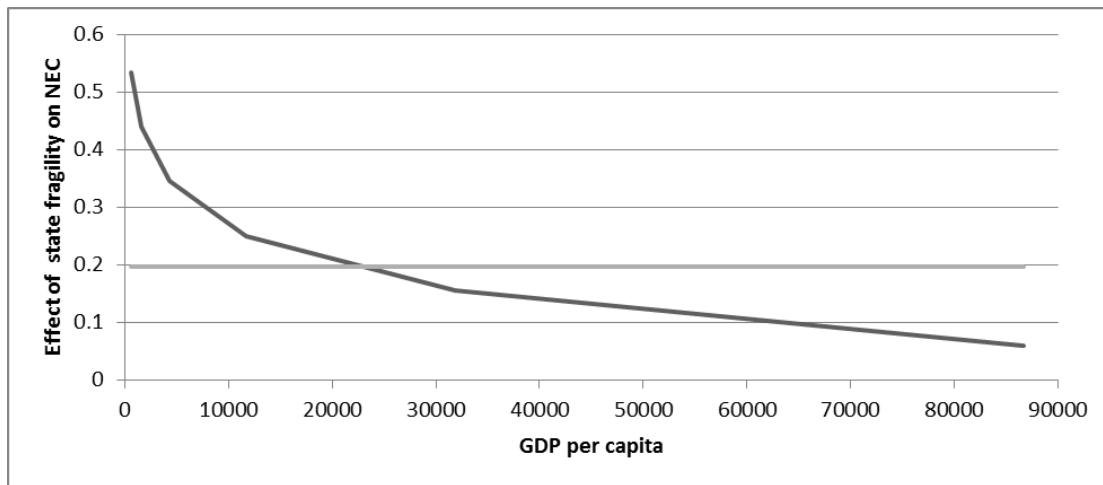
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Controls		Control+Predictors		Control+Predictors+interaction	
	OPP	NEC	OPP	NEC	OPP	NEC
<b>Individual level controls</b>						
Know Entrep	0.799*** (0.00900)	0.402*** (0.0144)	0.803*** (0.00901)	0.399*** (0.0144)	0.803*** (0.00901)	0.400*** (0.0144)
Self-Efficacy	1.582*** (0.0123)	1.114*** (0.0182)	1.584*** (0.0123)	1.113*** (0.0182)	1.584*** (0.0123)	1.113*** (0.0182)
Fear of Failure	-0.491*** (0.00989)	-0.0610*** (0.0151)	-0.492*** (0.00990)	-0.0606*** (0.0151)	-0.492*** (0.00990)	-0.0602*** (0.0151)
Age	0.0898*** (0.00244)	0.0917*** (0.00386)	0.0898*** (0.00244)	0.0916*** (0.00386)	0.0898*** (0.00244)	0.0916*** (0.00386)
Age squared	-0.00133*** (3.07e-05)	-0.00117*** (4.81e-05)	-0.00133*** (3.07e-05)	-0.00117*** (4.81e-05)	-0.00133*** (3.07e-05)	-0.00117*** (4.81e-05)
Gender	0.281*** (0.00877)	-0.00877 (0.0140)	0.281*** (0.00877)	-0.00895 (0.0140)	0.281*** (0.00877)	-0.00895 (0.0140)
Education	0.269*** (0.0105)	-0.358*** (0.0183)	0.257*** (0.0106)	-0.349*** (0.0184)	0.257*** (0.0106)	-0.349*** (0.0184)
<b>Country level controls</b>						
Unemploy	-0.0369*** (0.00174)	0.0326*** (0.00292)	-0.0329*** (0.00182)	0.0281*** (0.00298)	-0.0328*** (0.00182)	0.0287*** (0.00300)
Labor Freedom	0.00402*** (0.00116)	-0.00928*** (0.00178)	0.00205 (0.00129)	-0.00749*** (0.00184)	0.00215 (0.00131)	-0.00680*** (0.00187)
Trade Freedom	-0.0174*** (0.00136)	-0.00365* (0.00218)	-0.0254*** (0.00161)	0.00263 (0.00257)	-0.0254*** (0.00161)	0.00235 (0.00258)
Government support and policies	0.202*** (0.0219)	-0.00224 (0.0337)	0.167*** (0.0223)	0.0323 (0.0340)	0.167*** (0.0223)	0.0319 (0.0340)
Taxes and bureaucracy	-0.0171 (0.0246)	0.0214 (0.0405)	-0.0339 (0.0250)	0.0224 (0.0402)	-0.0350 (0.0252)	0.0119 (0.0406)
<b>Country level predictors</b>						
ln_gdp			0.318*** (0.0330)	-0.220*** (0.0456)	0.316*** (0.0334)	-0.213*** (0.0459)
State_Fragility			-0.134† (0.0777)	0.197** (0.0876)	-0.0308 (0.292)	1.139** (0.467)
State_Fragility*ln_gdp					-0.0104 (0.0282)	-0.0949** (0.0463)
Constant	-4.405*** (0.146)	-5.668*** (0.236)	-6.681*** (0.284)	-4.117*** (0.379)	-6.671*** (0.285)	-4.245*** (0.385)
Residual country-year variance	0.15119	0.50779	0.536	0.373	0.601	0.418
Wald Chi2	44953	7569	45009	7619	44979	7624
Prob>Chi2	0.000	0.000	0.000	0.000	0.000	0.000
Observations	956,925	956,925	956,925	956,925	956,925	956,925
Number of groups	51	51	51	51	51	51

Standard errors in parentheses

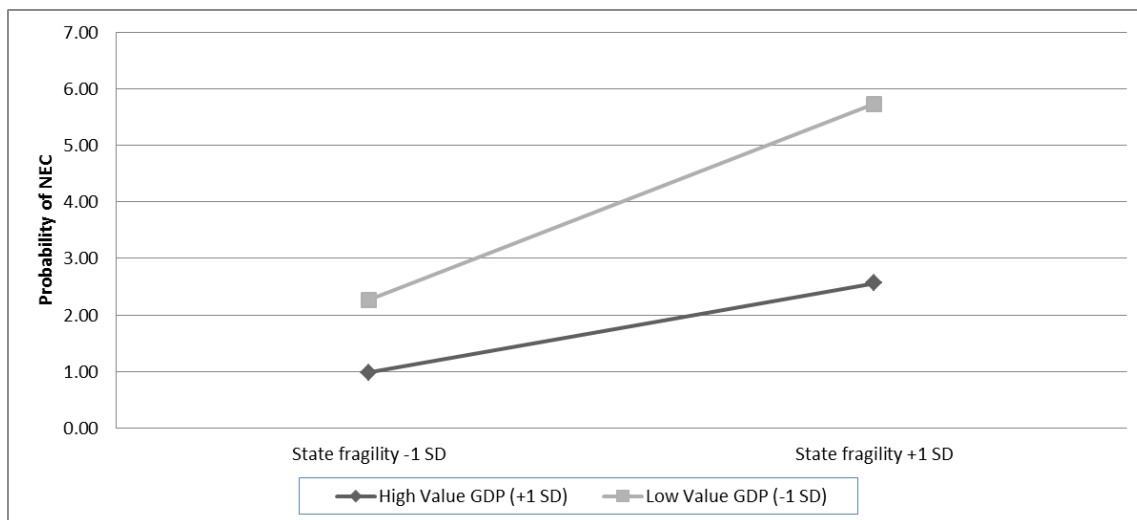
\*\*\* p<0.01, \*\* p<0.05, † p<0.1



**Figure 1: Marginal effect of State Fragility in the individual level probability of engaging NEC based entrepreneurship. Moderated by country development level.**



**Figure 2: Predicted probability of engaging NEC based entrepreneurship (%), as a function of State Fragility, moderated by country economic development level.**



## **Appendix 1**

### **Global Entrepreneurship Monitor National Experts Survey (NES).**

The National Experts Survey (NES) is one of the worldwide standard questionnaires of the GEM methodology (Levie & Autio, 2008; Reynolds et al., 2005). Each year, at least 36 experts in participating countries complete the NES questionnaire. These experts are selected following a strict protocol. NES is divided into sections that evaluate nine factors: financial support, government policies, government programs, education and training, R&D transfer, commercial and professional infrastructure, internal market openness, access to physical infrastructure, and socio-cultural norms. These factors are measured using multi-item scales that consider between three and seven questions. These questions are answered on a five-point Likert scale (where “completely true” = 1 and “completely false” = 5). GEM calculates an index for each factor using principal component analysis after accurate analysis of each scale feasibility (Cronbach’s Alpha of each construct by year is available by request).

Empirical studies (Levie & Autio, 2008) have shown that government policies, education and training, and the internal market present two sub-divisions for each one. In this study, we employ the two sub-factors that constitute the government policies category:

- a) Government support and policies:
  - Government policies (e.g., public procurement) consistently favor new firms.
  - The support for new and growing firms is a high priority for policy at the national government level.
  - The support for new and growing firms is a high priority for policy at the local government level.
- b) Burden of taxes and bureaucracy on entrepreneurship activities:
  - New firms can get most of the required permits and licenses in about a week.
  - The amount of taxes is NOT a burden for new and growing firms.
  - Taxes and other government regulations are applied to new and growing firms in a predictable and consistent way.
  - Coping with government bureaucracy, regulations, and licensing requirements is not unduly difficult for new and growing firms.